



UNITED STATES PATENT AND TRADEMARK OFFICE

140

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,399	03/18/2004	Stephan K. Barsun	200313138-1	5524

22879 7590 04/27/2007
HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

PAPE, ZACHARY

ART UNIT	PAPER NUMBER
----------	--------------

2835

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/803,399	Applicant(s) BARSUN ET AL.	
	Examiner Zachary M. Pape	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-13, 15-19, 23, 25, 27-37, 39-43, 46, 47, 49-54, 56 and 57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3, 5-13, 15, 16, 18, 19, 23, 25, 27-33, 43, 46, 47, 49, 50 and 57 is/are allowed.
- 6) ☒ Claim(s) 17, 34-37, 39-42, 51, 53 and 54 is/are rejected.
- 7) ☒ Claim(s) 52, 56 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The following detailed action is in response to the correspondence filed 3/12/2007.

Examiner's Note

The Examiner notes page 11 section II of the present remarks.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 17 recites, the limitation, "the fourth device". There is insufficient antecedent basis for this limitation in the claim. For the purposes of examination, the Examiner has considered the fan limitation with only a second device.

The Examiner notes that on page 11 of the remarks the Applicant's note that claim 17 has been amended, however no such amendment appears in claim 17.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 39, 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Patel (US 5,396,403).

With respect to claim 39, Patel teaches a heat dissipating arrangement comprising: a first heat emitting device (63); a second heat emitting device (67); and a first heat sink (75) having fins thermally coupled to the first device (Column 6, Lines 5-18), wherein the fins of the first heat sink overlap and extend opposite to opposite sides of the second device (See Fig 4).

With respect to claim 40, Patel further teaches a second heat sink (83) thermally coupled to the second device, (67, Column 6, Lines 5-18) wherein the first heat sink extends opposite to opposite sides of the second heat sink (See Fig 4).

3. Claims 41-42 are rejected under 35 U.S.C. 102(b) as being anticipated by DiBene, II et al. (US 6,356,448 – hereafter referred to as DiBene).

With respect to claim 41, DiBene further teaches a first heat sink for use with a first heat emitting device (118), a second heat emitting device, and a second heat sink thermally coupled to the second heat emitting device the first heat sink comprising: at least one heat dissipating structure (142) having fins (144) configured to be thermally coupled to the first heat emitting device while extending at least partially around and opposite to opposite sides of the second heat sink having fins (As illustrated in Fig 1, wherein the fins are comprised of the material between apertures 168).

With respect to claim 42, DiBene further teaches a first heat emitting device (118), a second heat emitting device, and a second heat sink thermally coupled to the

Art Unit: 2835

second heat emitting device and having a plurality of fins (158, 168), the first heat sink comprising: at least one heat dissipating structure (142) configured to be thermally coupled to the first heat emitting device while extending at least partially around and opposite to opposite sides of the plurality of fins of the second heat sink (As illustrated in Fig 3).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 34-37, 39-40 (alternatively), 51, and 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants Admitted Prior Art (Hereinafter AAPA) in view of DiBene, II et al.

With respect to claims 34, AAPA teaches (on Page 1 of the present specification, specifically paragraphs 0002 and 0003) a processor module comprising: a processor having a first heat transfer surface; a power pod electrically connected to the processor to supply power to the processor, the power pod having a second heat transfer surface, a first heat sink overlapping the power pod and thermally coupled to the second heat transfer surface; and a second heat sink thermally coupled to the first heat transfer surface. AAPA is silent as to the second heat sink extending at least partially across the first heat sink. DiBene teaches the conventionality of having a heat

Art Unit: 2835

sink (142) extend at least partially across another heat sink (Comprising 106, 126, and 128). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of DiBene et al. with that of AAPA to provide improved packaging of electronic circuits while also providing efficient means to purge any excess associated heat from electronic assemblies (See Column 1, Lines 15-18, I.E. use the heat sink configuration taught to increase heat dissipation and preserve packaging and power distribution qualities).

With respect to claim 35, DiBene et al. further teaches that the second heat sink (142) extends completely across the first heat sink (106, 126, 128, See Fig 2).

With respect to claim 36, DiBene et al. further teaches that the second heat sink extends on opposite sides of the first heat sink (See Fig 2).

With respect to claim 37, AAPA further teaches (See Page 1, paragraphs 0001 – 0003 a multi-device heat sink module for being connected to a circuit board, the module comprising: a power supply, a processor, a first means for dissipating heat emitted by the power supply while not substantially receiving heat from the processor, and a second means for dissipating heat emitted by the processor (“To cool or dissipated heat from processors and power pods, many computer systems include heat sinks positioned adjacent the processor and the power pod”). AAPA is silent as to the second means extending at least partially across and over the first means. DiBene teaches the conventionality of having a second heat sink (142) extend at least partially across a first heat sink (Comprising 106, 126, and 128). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of

Art Unit: 2835

DiBene et al. with that of AAPA to provide improved packaging of electronic circuits while also providing efficient means to purge any excess associated heat from electronic assemblies (See Column 1, Lines 15-18, I.E. use the heat sink configuration taught to increase heat dissipation and preserve packaging and power distribution qualities).

With respect to claim 39, AAPA further teaches (See paragraphs 0001, 0002, and 0003) a heat dissipating arrangement comprising: a first heat emitting device; a second heat emitting device; and a first heat sink thermally coupled to the first device. AAPA is silent as to the fins of the first device overlapping and extending opposite to opposite sides of the second device. DiBene teaches the conventionality of having a first heat sink (142) overlapping and extending opposite to opposite sides of a second heat sink (Comprising 106, 126, and 128). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of DiBene et al. with that of AAPA to provide improved packaging of electronic circuits while also providing efficient means to purge any excess associated heat from electronic assemblies (See Column 1, Lines 15-18, I.E. use the heat sink configuration taught to increase heat dissipation and preserve packaging and power distribution qualities).

With respect to claim 40, AAPA further teaches a second heat sink thermally coupled to the second device. DiBene et al. further teaches that the first heat sink extends opposite to opposite sides of the second heat sink (See Fig 1).

Art Unit: 2835

With respect to claims 51, 53 DiBene et al. further teaches a first heat sink (Comprising 106, 126, 128) sandwiched between a processor (108) and a second heat sink (142).

With respect to claim 54, DiBene et al. further teaches that the second heat sink has fins (Material between 168) and wherein the at least one heat dissipating structure (142) having fins is configured to extend at least partially around an opposite to opposite sides of the fins of the second heat sink (See Fig 1).

Allowable Subject Matter

5. Claims 1-3, 5-13, 15-16, 17 (Pending alleviation of the 112 2nd rejection to claim 17) 18, 19, 23, 25, 27-33, 43, 46, 47, 49-50 and 57 are allowed.

With respect to claim 1-3, 5-13, 15-17, 18, 46, 49-50, see the office action dated 12/12/2006.

With respect to claims 19, 23, 25, 27-33, see the office action dated 12/12/2006.

With respect to claims 43, and 47, see the office action dated 12/12/2006.

With respect to claim 57, the allowability resides in the overall structure of the device as recited in independent claim 57 and at least in part because claim 57 recites, "a first array of fins thermally coupled to the first base so as to extend from the first base in a first direction, wherein the first array of fins includes consecutive fins forming a transverse channel therebetween extending in a second direction perpendicular to the first direction and having opposite transverse open ends".

The aforementioned limitations in combination with all remaining limitations of claim 57 are believed to render said claim 57 patentable over the art of record.

6. Claims 52 and 56 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 52, the allowability resides in the overall structure of the device as recited in dependent claim 52 and at least in part because claim 52 recites, "the first means for dissipating heat is sandwiched between the second means for dissipating heat and the power supply".

The aforementioned limitations in combination with all remaining limitations of claim 37 and 52 are believed to render said claim 52 patentable over the art of record.

With respect to claim 56, the allowability resides in the overall structure of the device as recited in dependent claim 56 and at least in part because claim 56 recites, "a first array of fins thermally coupled to the first base so as to extend from the first base in a first direction, wherein the first array of fins includes consecutive fins forming a transverse channel therebetween extending in a second direction perpendicular to the first direction and having opposite transverse open ends".

The aforementioned limitations in combination with all remaining limitations of claim 34 and 56 are believed to render said claim 56 patentable over the art of record.

Response to Arguments

7. Applicant's arguments filed 3/12/2007 have been fully considered but they are not persuasive.

With respect to the Applicants' remarks to claims 34 and 37 that, "Nowhere does DiBene disclose or suggest that a heatsink that is connected to the processor should extend over the heatsink that extends over the power pod" the Examiner respectfully notes that it was never the Examiners position that DiBene teach the heatsink/powerpod, heatsink/processor relationship as alleged in the remarks. Rather the Examiner simply used the DiBene reference to teach a second heatsink extending over a first heatsink. The relationship between the heatsink/powerpod, heatsink/processor is addressed by AAPA.

With respect to the Applicants' remarks to claims 35-36 that, "the heatsink clearly does not extend completely across heatsink 142" the Examiner respectfully notes that DiBene clearly teaches a heatsink 142 which clearly extends across a first heat sink (106, 126, 128, 158) as claimed.

With respect to the Applicants' remarks to claim 39 the Examiner respectfully notes that while the Examiner incidentally placed "heat sink" in place of "second device" the Examiner alleges that the Examiner's intent was clear in view of the additional remarks to claim 39 (See Page 18, specifically, "secondly..."). Even so the Examiner provided an alternative rejection in view of Patel which correctly states "second device".

Regarding the Applicants' remarks that the heatsink 142 "do not overlap and extend opposite to opposite sides of either another heatsink or another electronic

device” the Examiner respectfully disagrees. The heatsink of DiBene clearly teaches a heat sink 142 which extends opposite to opposite sides of the a first heat emitting device (156) as shown in Fig 1 since the device (156) has opposite sides and the fins are extend opposite to the opposite sides in the sense that the fins extend into the page (as well as vertically and horizontally).

With respect to the Applicants' remarks to claim 40, the Examiner notes the heat sink arrangement as taught by DiBene clearly teaches a first heatsink (142) which extending opposite to opposite sides of a second heatsink (106, 126, 128, 158 – See Fig 1 – in that the heatsink (142) extending horizontally, vertically, and into and out of the page and therefore no matter which two opposite sides of the second device you choose, the heatsink extends opposite thereto).

With respect to the Applicants' remarks to claim 51, the Examiner respectfully notes the response to claim 34 above and further notes that the DiBene clearly teaches a second heat sink (142) which is above a first heat sink (106, 126, 128, 158) and a device (108) which is located below the first heat sink. Therefore, as admitted by the Applicant's, DiBene teaches a first heat sink is sandwiched between a processor and the second heat sink, and therefore AAPA in view of DiBene teaches the limitations as claimed.

With respect to the Applicants' remarks to claim 39 that, “Patel fails to disclose an arrangement having a first and second heat emitting devices, were in a first heat sink having fins thermally coupled to the first device overlap and extend opposite to opposite sides of the second device”, the Examiner respectfully disagrees. As detailed in the Fig

Art Unit: 2835

4, Patel clearly discloses a second device (67) with opposite sides, and further the first heat sink (75) extends opposite to the opposite sides as claimed (In that the fins extend horizontally, vertically, and into and out of the paper and therefore if one were to choose the opposite sides to be two opposite points on the top of the device (67) then the fins would extend opposite to the points by extending into and out of the page).

With respect to the Applicants' remarks to claim 40, the Examiner respectfully notes that in the same way that the fins extend opposite to opposite sides of the device, the fins also extend opposite to opposite sides of the second heat sink (83 – see Fig 4).

With respect to the Applicants' remarks to claim 41 that, "DiBene fails to disclose or suggest.. fins extend at least partially around and opposite to opposite sides of a second heat sink", the Examiner respectfully disagrees. As detailed in Fig 1 the first heat sink (comprising 142, 144) extends at least partially around and opposite to opposite sides of the second heat sink (106, 126, 128, 158). The fins of the second heat sink extend horizontally, vertically and into and out of the page which, when taken in conjunction with two opposite sides of the heat sink, will extend opposite thereto.

With respect to the Applicants' remarks to claim 42 that, "DiBene fails to disclose or suggest a heat displaying structure which extends at least partially around an opposite to opposite sides of fins associated with another heat sink", the Examiner respectfully disagrees. As detailed in Fig 1 the first heat sink (comprising 142, 144) extends at least partially around and opposite to opposite sides of the second heat sink. The fins of the second heat sink extend horizontally, vertically and into and out of the

page which, when taken in conjunction with two opposite sides of the heat sink, will extend opposite thereto.

With respect to the Applicants' remarks to claim 54 that, "Heat sink 142 of DiBene does not extend at least partially around and opposite to opposite sides of the material plated through holes 168", the Examiner respectfully disagrees. As detailed in Fig 1 the first heat sink (comprising 142, 144) extends at least partially around and opposite to opposite sides of the second heat sink (106, 126, 128, 158). The fins of the second heat sink extend horizontally, vertically and into and out of the page which, when taken in conjunction with two opposite sides of the heat sink, will extend opposite thereto.

Applicant's arguments with respect to claim 52 have been fully considered and are persuasive. The rejection of said claim has been withdrawn.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary M. Pape whose telephone number is 571-272-2201. The examiner can normally be reached on Mon. - Thur. (7:00am - 5:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash Gandhi can be reached at 571-272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ZMP

JN Gandhi
4/20/07
JAYPRAKASH GANDHI
SUPERVISOR, PATENT EXAMINER